

**COUNTY OF SAN MATEO  
PLANNING AND BUILDING DEPARTMENT**

**DATE:** April 19, 2018

**TO:** Zoning Hearing Officer

**FROM:** Planning Staff

**SUBJECT:** Consideration of two Use Permits, pursuant to Sections 6500 and 6510 of the San Mateo County Zoning Regulations, to install new wireless telecommunication facilities on existing joint utility poles located in the public right-of-way in front of: (1) 431 Sequoia Avenue and (2) 370 Alexander Avenue (on West Selby Lane), in the unincorporated Sequoia Tract area of San Mateo County.

County File Numbers:

ITEM 1	PLN 2017-00500
ITEM 2	PLN 2017-00501

**PROPOSAL**

The applicant proposes to install new wireless telecommunication facilities on existing joint utility poles located in the public right-of-way in front of: (1) 431 Sequoia Avenue and (2) 370 Alexander Avenue (on West Selby Lane) in the unincorporated Sequoia Tract area. In both cases, the proposed equipment consists of one small cell antenna attached to the top of the pole by a 7-ft. pole extension, and ancillary pole mounted equipment boxes, the largest being approximately 2.25 sq. ft. in size. The new facilities will consist of a 2-ft. tall omnidirectional cylindrical antenna, mounted at an effective height of approximately 48-48.5 feet above ground on the existing joint utility poles. No other wireless telecommunication base stations are reported at these two sites and no grading or tree removal activities are proposed.

**RECOMMENDATION**

That the Zoning Hearing Office approve the Use Permits, County File Numbers, as listed below, by making the required findings and adopting the conditions of approval listed in Attachment A:

ITEM 1	PLN 2017-00500	431 Sequoia Avenue
ITEM 2	PLN 2017-00501	370 Alexander Avenue

## **BACKGROUND**

Report Prepared By: Helen Gannon, Project Planner, 650/363-1882

Applicant: AT&T (C/O MODUS)

Land Owner: Public Right-of-Way (San Mateo County Department of Public Works)

Pole Owner: Joint Pole Association (JPA)

Sphere-of-Influence: City of Redwood City

Existing Land Use: Utility Poles in the Public Right-of-Way

Property Details for the Proposed Use Permits:

<b>Item 1 - County File Number: PLN 2017-00500</b>	
Location	Public Right-of-Way in front of 431 Sequoia Avenue, Sequoia Tract
APN	Public Right-of-Way adjacent to 069-352-070
Existing Zoning	R-1/S-74 (Single-Family Residential/Minimum Lot Size 5,000 sq. ft.)
General Plan Designation	Medium Density Residential Urban
Flood Zone	Zone X (area of minimal flood risk); FEMA Panel No. 06081C 0302E; effective October 2012

<b>Item 2 - County File Number: PLN 2017-00501</b>	
Location	Public Right-of-Way in front of 370 Alexander Avenue, Sequoia Tract
APN	Public Right-of-Way adjacent to 059-263-110
Existing Zoning	R-1/S-74 (Single-Family Residential/Minimum Lot Size 5,000 sq. ft.)
General Plan Designation	Medium Density Residential Urban
Flood Zone	Zone X (area of minimal flood risk); FEMA Panel No. 06081C 0302E; effective October 2012

Environmental Evaluation: Both projects are categorically exempt under the provisions of Class 3, Section 15303, of the California Environmental Quality Act (CEQA) Guidelines for construction of a new small structure and installation of small new equipment and a facility in a small structure.

Setting: The proposed project sites are located on existing utility poles in the public right-of-way south of Woodside Road between Alameda de las Pulgas and Highway 82 in the unincorporated Sequoia Tract area. The surrounding area is an urbanized single-family residential neighborhood.

Chronology:

<u>Date</u>	<u>Action</u>
November 30, 2017	- Use permit applications submitted.
February 7, 2018	- Application deemed complete.
April 19, 2018	- Zoning Hearing Officer Public Hearing date.

**DISCUSSION**

A. KEY ISSUES

1. Compliance with the General Plan

Staff has determined that both projects comply with all applicable County General Plan policies, specifically:

Visual Quality Policies

Policy 4.21 (*Utility Structures*) requires minimizing adverse visual impacts generated by utility structures. The project sites are located within the public right-of-way along local roads in a single-family residential area. The proposed antennas and mounted equipment, located 48-48.5 feet above grade, will be painted to match the existing utility pole and shall be constructed of non-reflective materials.

2. Compliance with the Zoning Regulations

The proposed project areas are located within the public right-of-way in the R-1/S-74 Zoning District. The zoning district standards, with the exception of height, are not applicable since the site is located within the public right-of-way.

The maximum height allowed in the R-1/S-74 Zoning District is 36 feet. The proposed projects will consist of one small cell antenna at the top of the pole and ancillary pole mounted equipment. The proposed antennas and extension brackets will be over the maximum height allowed in the R-1/S-74 Zoning District. This is due to General Order No. 95 (GO95), mandated by the California Public Utilities Commission that requires all cellular antennas to be at least 6 feet from adjacent power supply lines. The extension brackets only come in 3-, 5-, and 7-ft. models. By using the 7' extension bracket in addition to the antennas, the 6 ft. required separation from power lines will be achieved, but a maximum height of 48' and 48.5' is obtained, which exceeds the 36 ft. zoning height limit. In this case, State regulations supersede local regulations.

Section 6512.2.1.2 (*Development And Design Standards For New Wireless Telecommunication Facilities That Are Not Co-Location Facilities*) of the San Mateo County Zoning Regulations state, in any Residential (R) District, that no monopole or antenna shall exceed the maximum height for structures allowed in that district, except that new equipment on an existing facility in the public right-of-way shall be allowed to exceed the maximum height for structures allowed in that district by 10% of the height of the existing facility, or by 5 feet, whichever is less. The new equipment for these wireless telecommunication facilities will not be in compliance with this section. However, due to GO95, the items have been specially designed to meet the State's safety requirements to meet the minimum clearance of 6'. Therefore, the proposed projects have met this section to the best that they can.

3. Compliance with the Wireless Telecommunication Facilities Ordinance

Staff has reviewed these projects against the provisions of the Wireless Telecommunication Facilities (WTF) Ordinance and determined that the projects comply with the applicable standards discussed below:

a. Development and Design Standards

**Section 6512.2.A: New wireless telecommunication facilities shall be prohibited in a Sensitive Habitat, as defined by Policy 1.8 of the General Plan (Definition of Sensitive Habitats) for facilities proposed outside of the Coastal Zone, and by Policy 7.1 of the Local Coastal Program (Definition of Sensitive Habitats) for facilities proposed in the Coastal Zone, except when all of the following written findings are made by the reviewing authority: (1) There is no other feasible location(s) in the area; (2) There is no alternative facility configuration that would avoid impacts to environmentally sensitive habitat areas; (3) Prohibiting such facility would be inconsistent with federal law; (4) Adverse impacts to the sensitive habitat are minimized to the maximum extent feasible; and (5) Unavoidable impacts are mitigated so that there is no loss in habitat quantity or biological productivity.**

The projects are not located in a sensitive habitat, as defined by Policy 1.8 of the General Plan.

**Section 6512.2.B: New wireless telecommunication facilities shall not be located in areas zoned Residential (R), unless the applicant demonstrates, by a preponderance of the evidence, that a review has been conducted of other options, and no other sites or combination of sites allows feasible service or adequate capacity and coverage. This review shall include, but is not limited to, identification of alternative site(s) within 2.5 miles of the proposed facility.**

The proposed facilities will be located on joint utility poles within the public right-of-way in the R-1/S-74 Zoning District. The applicant chose the proposed locations to adequately provide AT&T wireless voice and data coverage to the surrounding area where there is currently a gap in service coverage. Small cell facilities are not meant to increase the coverage area but to assist with unloading traffic from the macro site network. This increases data speed and decreases dropped calls. Because of this, they are placed in specific locations of need to service a specific community.

In the AT&T Site Analysis (see Attachment E), the applicant has identified and researched alternative sites. The radius of the map provided is smaller than 2.5 miles because small cell technology requires the sites to be much closer together than the larger macro sites. Because of this, a larger radius would not be an accurate representation of AT&T's site analysis process. Five other alternative sites were identified but were ruled out as viable proposed sites due to the additional impacts that may result if chosen. These impacts include tree trimming or removal, inadequate space on the existing pole, limited climbing space for maintenance, or were located outside the targeted area.

Among the researched locations, these proposed locations are the least intrusive and will fill the coverage gap necessary to provide adequate wireless and data coverage.

**Section 6512.2.C: New wireless telecommunication facilities shall not be located in areas where co-location on existing facilities would provide equivalent coverage with less environmental impact.**

The applicant was unable to identify any existing wireless facilities within a 2.5-mile radius that would either allow co-location or provide coverage to the target area. The proposed small cell technology is the least environmentally impactful wireless technology thus far.

**Section 6512.2.D: Except where aesthetically inappropriate, new wireless telecommunication facilities must be constructed so as to accommodate co-location, and must be made available for co-location unless technologically infeasible.**

Future co-locations are technically feasible as long as the proposed facilities comply with California Public Utilities Commission General Order 95 (GO95) engineering requirements. This proposed facility will be a pole-top mounted facility and, thus, cannot be co-located per PG&E GO95 requirements. Therefore, the applicant does not expect future co-locations.

**Sections 6512.2.E and F: Seek to minimize and mitigate visual impacts from public views by siting new facilities outside of the public view, using natural vegetation for screening, painting equipment to blend with existing landscaping, and designing the facility to blend in with the surrounding environment.**

The proposed facilities include two panel antenna(s) located at a maximum height of 48-48.5 feet above grade mounted on existing joint utility poles located in the public right-of-way. The antenna(s) shall be painted a non-reflective color to blend with the existing conditions. The equipment boxes shall also be painted a non-reflective color to match the utility pole as recommended in Condition of Approval No. 4 (see Attachment A) to reduce visual impacts and to blend in with the existing equipment. No trees or vegetation are proposed for removal.

**Section 6512.2.G: The exteriors of wireless telecommunication facilities shall be constructed of non-reflective materials.**

The proposed facilities will be constructed of non-reflective materials.

**Section 6512.2.H: The wireless telecommunication facility shall comply with all the requirements of the underlying zoning district(s), including, but not limited to, setbacks, Design Review in the DR district(s), Architectural Review in designated Scenic Corridors, and Coastal Development Permit regulations in the CZ or CD zones.**

As discussed in Section 2, Compliance with the Zoning Regulations, the existing joint utility poles, where the proposed facilities will be located, are situated in the public right-of-way and are not subject to the R-1/S-74 Zoning District development standards for setbacks; compliance with height standards is discussed below. Design Review, Architectural Review, and Coastal Development regulations are not applicable in this area.

**Section 6512.2.I.2: States that new equipment located on existing facilities in the public right-of-way in any Residential (R) District shall be allowed to exceed the maximum height for structures allowed in that district by 10% of the height of the existing facility, or by 5 feet, whichever is less.**

The proposed facility must comply with PG&E GO95 clearance regulations which requires at least 6 feet of clearance from the power lines. As stated in Section 2 of this report, the proposed project complies as much as is reasonably possible. The proposed antennas will be installed on existing joint utility poles.

**Section 6512.2.J:** In any Residential (R) district, accessory buildings in support of the operation of the wireless telecommunication facility may be constructed, provided that they comply with the provisions of Sections 6410 through 6411 regarding accessory buildings, except that the building coverage and floor area maximums shall apply to buildings in aggregate, rather than individually. If an accessory building, not used in support of a wireless telecommunication facility, already exists on a parcel, no accessory building in support of the operation of the wireless telecommunication facility may be constructed absent removal of the existing accessory building. If an accessory building(s) in support of the operation of the wireless telecommunication facility is constructed on a parcel, no other accessory buildings, not used in support of a wireless telecommunication facility, shall be constructed until the accessory building(s) in support of the operation of that wireless telecommunication facility is (are) removed.

No accessory buildings will be constructed.

**Section 6512.2.K:** In any Residential (R) district, ground-mounted towers, spires, and similar structures may be built and used provided that they shall not cover, in combination with any accessory building(s), shelter(s), or cabinet(s), or other above-ground equipment used in support of the operation of the wireless telecommunication facility, more than 15% in area of the lot nor an area greater than 1,600 sq. ft. Buildings, shelters, and cabinets shall be grouped. Towers, spires, and poles shall also be grouped, to the extent feasible for the technology.

No new structures will be built or used in support of the operation of the wireless telecommunication facilities.

**Section 6512.2.L:** Diesel generators shall not be installed as an emergency power source unless the use of electricity, natural gas, solar, wind, or other renewable energy sources are not feasible. If a diesel generator is proposed, the applicant shall provide written documentation as to why the installation of options, such as electricity, natural gas, solar, wind, or other renewable energy sources, are not feasible.

No generators will be installed at the project sites.

b. Performance Standards

The proposed projects meet the required standards of Section 6512.3 (*Performance Standards for New Wireless Telecommunication Facilities that are Not Co-Location Facilities*) for lighting, licensing, provision of a permanent power source, timely removal of the facility,

and visual resource protection. There is no lighting proposed, proper licenses will be obtained from both the Federal Communications Commission (FCC) and the California Public Utilities Commission (CPUC), power for the facilities will be provided by PG&E, visual impacts will be minimal, and conditions of approval will require maintenance and/or removal of the facilities when they are no longer in operation. Furthermore, road access to the proposed project sites is existing and no noise in excess of San Mateo County's Noise Ordinance will be produced.

4. Compliance with the Use Permit Findings

For the use permit to be approved by the Zoning Hearing Officer, the following findings must be made:

- a. **That the establishment, maintenance, and/or conducting of the use will not, under the circumstances of this particular case, be detrimental to the public welfare or injurious to property or improvements in said neighborhood.**

Cellular communications facilities, such as these proposed projects, require the submittal and review of a radio frequency (RF) report to ensure that the RF emissions from the proposed antenna(s) do not exceed the Federal Communications Commission's public exposure limits. The applicant submitted radio frequency reports prepared by Hammett & Edison, Inc., dated November 29, 2017, confirming that the proposed facilities will comply with the prevailing standards for limiting public exposure to radio frequency energy and, thus, will not cause a significant impact on the environment (see Attachments F1-F6). The reports state that the maximum RF level at ground level is calculated to range between 0.69% and 0.71% of the applicable public exposure limit (see tables below). The maximum calculated level at the second-floor elevation of the nearby residences is calculated to be 1.2% of the public exposure limit (see tables below for site specific information). It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation. Due to the location of the mounted antenna(s), they will not be accessible to the general public and therefore no mitigation measures are necessary to comply with the FCC public exposure guidelines. To ensure compliance with occupational exposure limitations, staff has included Condition of Approval No. 16 (see Attachment A) for the posting of explanatory warning signs at the antennas and/or on the pole below the antennas, readily visible from any angle of approach to persons who may need to work within the area (see Attachment A).



Item No.	Planning Case No.	Approximate Location	Ground Floor Radio Frequency Exposure	Second Floor Radio Frequency Exposure
ITEM 1	PLN 2017-00500	431 Sequoia Avenue	0.69%	1.2%
ITEM 2	PLN 2017-00501	370 Alexander Avenue	0.71%	1.2%

With the discussion above, staff has determined that the proposed project will not have a negative environmental, health, or visual impact on persons or property within the project vicinity.

**b. That this telecommunication facility is necessary for the public health, safety, convenience, or welfare of the community.**

Staff has determined that installation of a cellular facility at these locations will allow for increased clarity, range, and capacity of the existing cellular network and will enhance services for the public. The proposed facilities are the least intrusive option available to expand AT&T's network capacity and service coverage in this area of Sequoia Tract. The proposed facilities will use existing utility infrastructure and add small equipment without disturbing the character of the neighborhood.

**B. ENVIRONMENTAL REVIEW**

These projects are categorically exempt pursuant to Section 15303, Class 3, of the California Environmental Quality Act (CEQA) related to the construction of a new, small structure and installation of small new equipment and a facility in a small structure.

**C. REVIEWING AGENCIES**

San Mateo County Building Inspection Section  
San Mateo County Department of Public Works  
Menlo Park Fire Protection District

**ATTACHMENTS**

- A. Recommended Findings and Conditions of Approval
- B. Vicinity Map; Specific for Each Site
- C1.-C2. Project Plans; Specific for Each Site
- D1.-D2. Photo Simulations; Specific for Each Site
- E. Possible PG&E Wood Pole Section Sites; Specific for Each Site
- F1.-F2. Radio Frequency Radiation Report prepared by Hammett & Edison, Inc., dated November 29, 2017; Specific for Each Site

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County of San Mateo  
 Planning and Building Department

**RECOMMENDED FINDINGS AND CONDITIONS OF APPROVAL**

Permit or Project File Number:

Hearing Date: April 19, 2018

ITEM 1	PLN 2017-00500
ITEM 2	PLN 2017-00501

Prepared By: Helen Gannon  
 Project Planner

For Adoption By: Zoning Hearing Officer

**RECOMMENDED FINDINGS**

Regarding the Environmental Review, Find:

1. That these projects are categorically exempt from environmental review, per Class 3, Section 15303, of the California Environmental Quality Act (CEQA) Guidelines for construction of a new, small structure and installation of small new equipment and a facility in a small structure.

Regarding the Use Permits, Find:

2. That the establishment, maintenance, and/or conducting of the uses will not, under the circumstances of these particular cases, be detrimental to the public welfare or injurious to the property or improvements in said neighborhood because the projects will meet current Federal Communications Commission (FCC) standards as shown in the radio frequency radiation reports and have been conditioned to maintain valid FCC and California Public Utilities Commission (CPUC) licenses.
3. That these telecommunications facilities are necessary for the public health, safety, convenience, or welfare of the community in that installing cellular facilities at these locations will provide increased and improved cellular coverage in the area for residents, commuters, and emergency personnel.

**RECOMMENDED CONDITIONS OF APPROVAL**

Current Planning Section

1. This approval applies only to the proposal, documents, and plans described in this report and submitted to and approved by the Zoning Hearing Officer on April 19, 2018. Minor revisions or modifications may be approved by the Community

Development Director if they are consistent with the intent of and in substantial conformance with this approval.

2. These use permits shall be for the proposed projects only. Any change or change in intensity of use shall require an amendment to the applicable use permit. Amendments to these use permits require an application for amendment, payment of applicable fees, and consideration at a public hearing.
3. These permits shall be valid for ten (10) years until April 19, 2028. If the applicant seeks to renew these permits, renewal shall be applied for six (6) months prior to expiration with the Planning and Building Department and shall be accompanied by the renewal application and fee applicable at that time. Renewal of these permits shall be considered at a public hearing.
4. The applicant shall paint the antenna(s) brown to match the utility poles. The equipment boxes shall also be painted a non-reflective brown color to match the utility poles. Color verification will be confirmed by the Current Planning Section prior to a final inspection for the building permit.
5. During project construction, the applicant shall, pursuant to Chapter 4.100 of the San Mateo County Ordinance Code, minimize the transport and discharge of storm water runoff from the construction site into storm drain systems by:
  - a. Stabilizing all denuded areas and maintaining erosion control measures continuously between October 1 and April 30. Stabilizing shall include both proactive measures, such as the placement of hay bales or coir netting, and passive measures, such as revegetating disturbed areas with plants propagated from seed collected in the immediate area.
  - b. Storing, handling, and disposing of construction materials and wastes properly, so as to prevent their contact with storm water.
  - c. Controlling and preventing the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water or sediments, and non-storm water discharges, to storm drains and watercourses.
  - d. Avoiding cleaning, fueling, or maintaining vehicles on-site, except in a designated area where wash water is contained and treated.
  - e. Delineating with field markers clearing limits, easements, setbacks, sensitive or critical areas, buffer zones, trees, and drainage courses.
  - f. Protecting adjacent properties and undisturbed areas from construction impacts using vegetative buffer strips, sediment barriers or filters, dikes, mulching, or other measures as appropriate.
  - g. Performing clearing and earth-moving activities only during dry weather.

- h. Limiting and timing application of pesticides and fertilizers to prevent polluted runoff.
  - i. Limiting construction access routes and stabilizing designated access points.
  - j. Avoiding tracking dirt or other materials off-site; cleaning off-site paved areas and sidewalks using dry sweeping methods.
  - k. The contractor shall train and provide instruction to all employees and subcontractors regarding the construction Best Management Practices.
6. These permits do not allow for the removal of any trees. Any tree removal will require a separate permitting process.
  7. The applicant shall not enter into a contract with the landowner or lessee which reserves for one company exclusive use of the structures on this site for telecommunication facilities.
  8. The wireless telecommunication facilities shall not be lighted or marked unless required by the Federal Communications Commission (FCC) or the Federal Aviation Administration (FAA).
  9. The applicant shall file, receive, and maintain all necessary licenses and registrations from the Federal Communications Commission (FCC), the California Public Utilities Commission (CPUC), and any other applicable regulatory bodies prior to initiating the operation of these facilities. The applicant shall supply the Planning and Building Department with evidence of each of these licenses and registrations. If any required license is ever revoked, the applicant shall inform the Planning and Building Department of the revocation within ten (10) days of receiving notice of such revocation.
  10. The projects' final inspection approval shall be dependent upon the applicant obtaining a permanent and operable power connection from the applicable energy provider.
  11. These wireless telecommunications facilities and all equipment associated with it shall be removed in its entirety by the applicant within 90 days if the FCC and/or CPUC license and registration are revoked or the facility is abandoned or no longer needed, and the sites shall be restored to blend with the surrounding area. The owner and/or operator of the wireless telecommunication facilities shall notify the Planning Department upon abandonment of the facility. Restoration shall be completed within two (2) months of the removal of the facility.
  12. These wireless telecommunications facilities shall be maintained by the permittee(s) and subsequent owners in a manner that implements visual resource protection requirements of Sections 6512.2.E and F above (e.g., landscape maintenance and painting), as well as all other applicable zoning standards and permit conditions.

13. Noise sources associated with demolition, construction, repair, remodeling, or grading of any real property shall be limited to the hours from 7:00 a.m. to 6:00 p.m., weekdays and 9:00 a.m. to 5:00 p.m., Saturdays. Said activities are prohibited on Sundays, Thanksgiving, and Christmas (San Mateo Ordinance Code Section 4.88.360).
14. If technically practical and without creating any interruption in commercial service caused by electronic magnetic interference (EMI), floor space, tower space, and/or rack space for equipment in a wireless telecommunication facility shall be made available to the County for public safety communication use.
15. Explanatory signs are required to be posted at the antennas and/or on the poles below the antennas, readily visible from any angle of approach to persons who might need to work within the project area.

#### Building Inspection Section

16. This project requires a Building Permit.
17. The installation shall be based on the latest California Building Standards Code, which at the time of this review is the 2016 California Building Standards, Title 24.

#### Department of Public Works

18. No proposed construction work within the public right-of-way shall begin until County requirements for the issuance of an encroachment permit, including review of the plans, have been met and an encroachment permit issued. The applicant shall contact a Department of Public Works inspector 48 hours prior to commencing work in the public right-of-way.

#### Menlo Park Fire Protection District

19. The applicant shall meet all applicable requirements of Section 608 of the 2016 CFC.
20. A final inspection is required with all corrections completed.
21. Approved plans, approval letter, and a permit must be on-site at the time of inspection.

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**ITEM 1**

File No.: PLN 2017-00500

Location: Public Right-of-Way in front of 431 Sequoia Avenue, Sequoia Tract

APN: Public Right-of-Way adjacent to 069-352-070

<b>R-1/S-74 Maximum Height</b>	<b>Height of Existing Utility Pole</b>	<b>Maximum Height of Antenna(s)</b>	<b>Ground Floor Radio Frequency Exposure</b>	<b>Send Floor Radio Frequency Exposure</b>	<b>Number of Proposed Antennas</b>
36 feet	39 feet 1 inch	48 feet 5 inches	0.69%	1.2%	1

**ITEM 2**

File No.: PLN 2017-00501

Location: Public Right-of-Way in front of 370 Alexander Avenue, Sequoia Tract

APN: Public Right-of-Way adjacent to 059-263-110

<b>R-1/S-74 Maximum Height</b>	<b>Height of Existing Utility Pole</b>	<b>Maximum Height of Antenna(s)</b>	<b>Ground Floor Radio Frequency Exposure</b>	<b>Send Floor Radio Frequency Exposure</b>	<b>Number of Proposed Antennas</b>
36 feet	38 feet 7 inches	48 feet	0.71%	1.2%	1

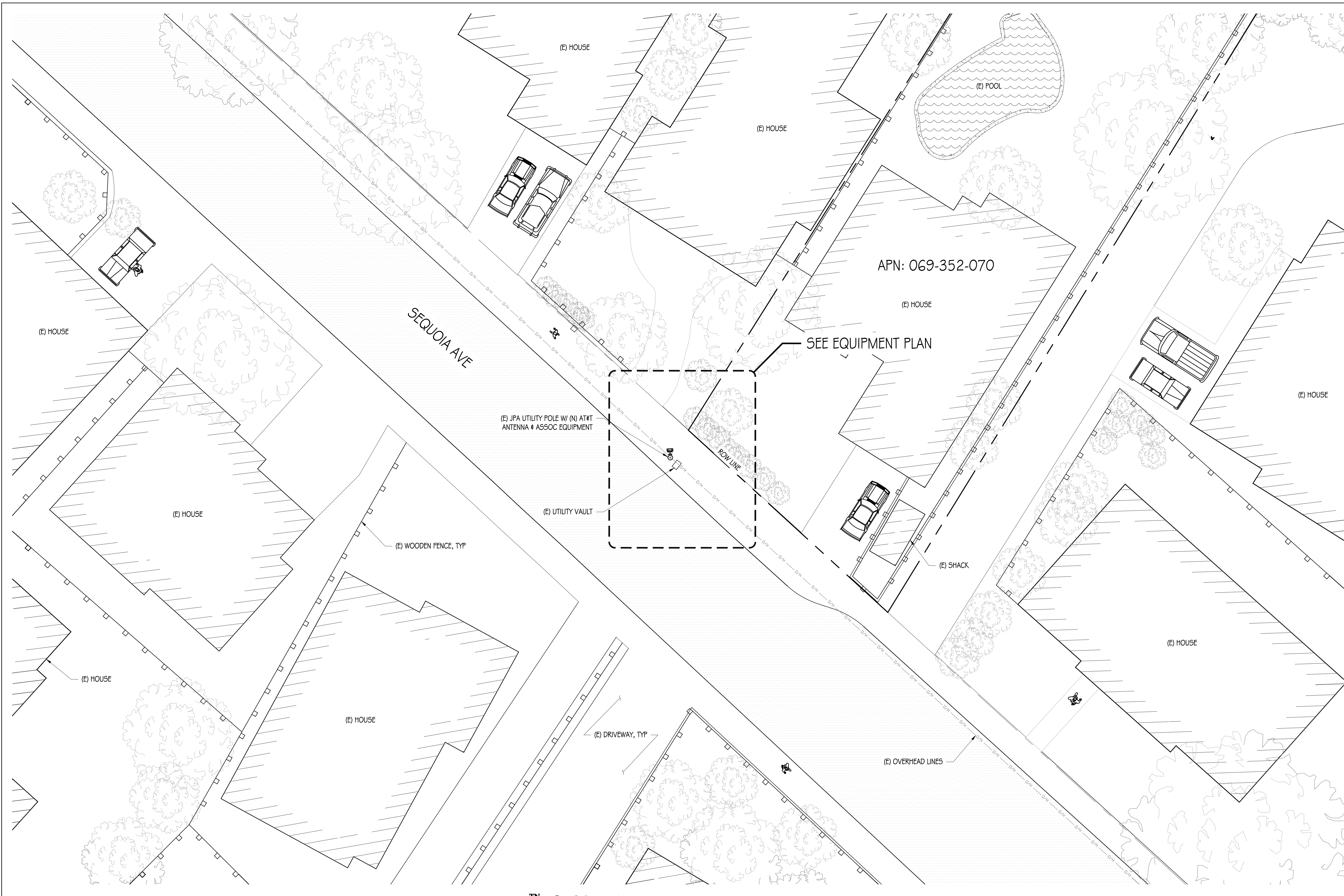


PLN2017-00500





PLN2017-00501



AT&T MOBILITY  
5001 EXECUTIVE PARKWAY  
SAN RAMON, CA 94583



240 STOCKTON STREET, 3RD FLOOR  
SAN FRANCISCO, CA 94108

**PRECISION DESIGN & Drafting, INC.**  
Phone: (530) 823-6546 www.pdnd.com  
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ROW ADJCT TO 431 SEQUOIA AVE  
ATHERTON, CA 94061

**ISSUE STATUS**

△	DATE	DESCRIPTION
	10/27/17	CD 90%
	11/27/17	CD 100%

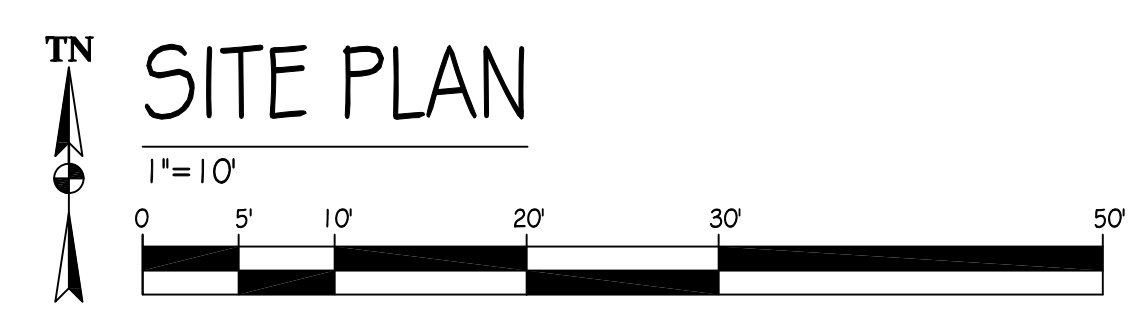
DRAWN BY: T. WEBB  
CHECKED BY: T. DICARLO  
APPROVED BY: B. McCOMB  
DATE: 11/27/17  
SHEET TITLE:

SITE PLAN

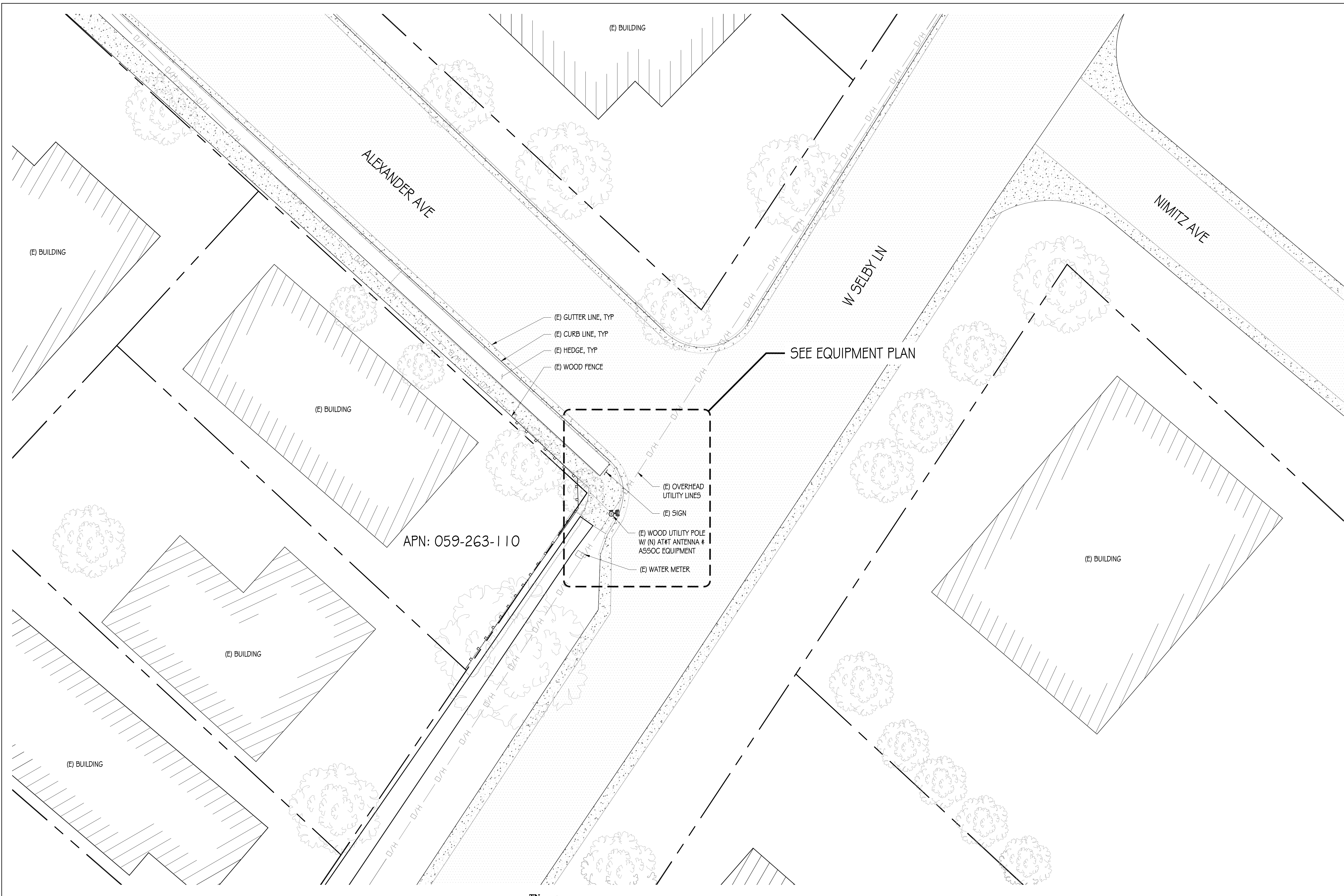
SHEET NUMBER

A-1

Attachment C1



**SITE PLAN**



Attachment C2



AT&T MOBILITY  
5001 EXECUTIVE PARKWAY  
SAN RAMON, CA 94583



240 STOCKTON STREET, 3RD FLOOR  
SAN FRANCISCO, CA 94108

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CRAN\_RSFR\_SF0K3\_040  
ROW ADJCT TO 1254 W SELBY LANE  
REDWOOD CITY, CA 94061

ISSUE STATUS

△	DATE	DESCRIPTION
	11/03/17	CD 90%
	11/27/17	CD 100%

DRAWN BY: B. LONGABAUGH  
CHECKED BY: T. DICARLO  
APPROVED BY: B. McCOMB  
DATE: 11/27/17

SHEET TITLE:  
SITE PLAN

SHEET NUMBER:  
A-1

11.17.2017

# Existing



CRAN\_RSFR\_SF0K3\_041  
ROW near 431 Sequoia Avenue, Redwood City, CA

# Proposed



proposed AT&T antenna

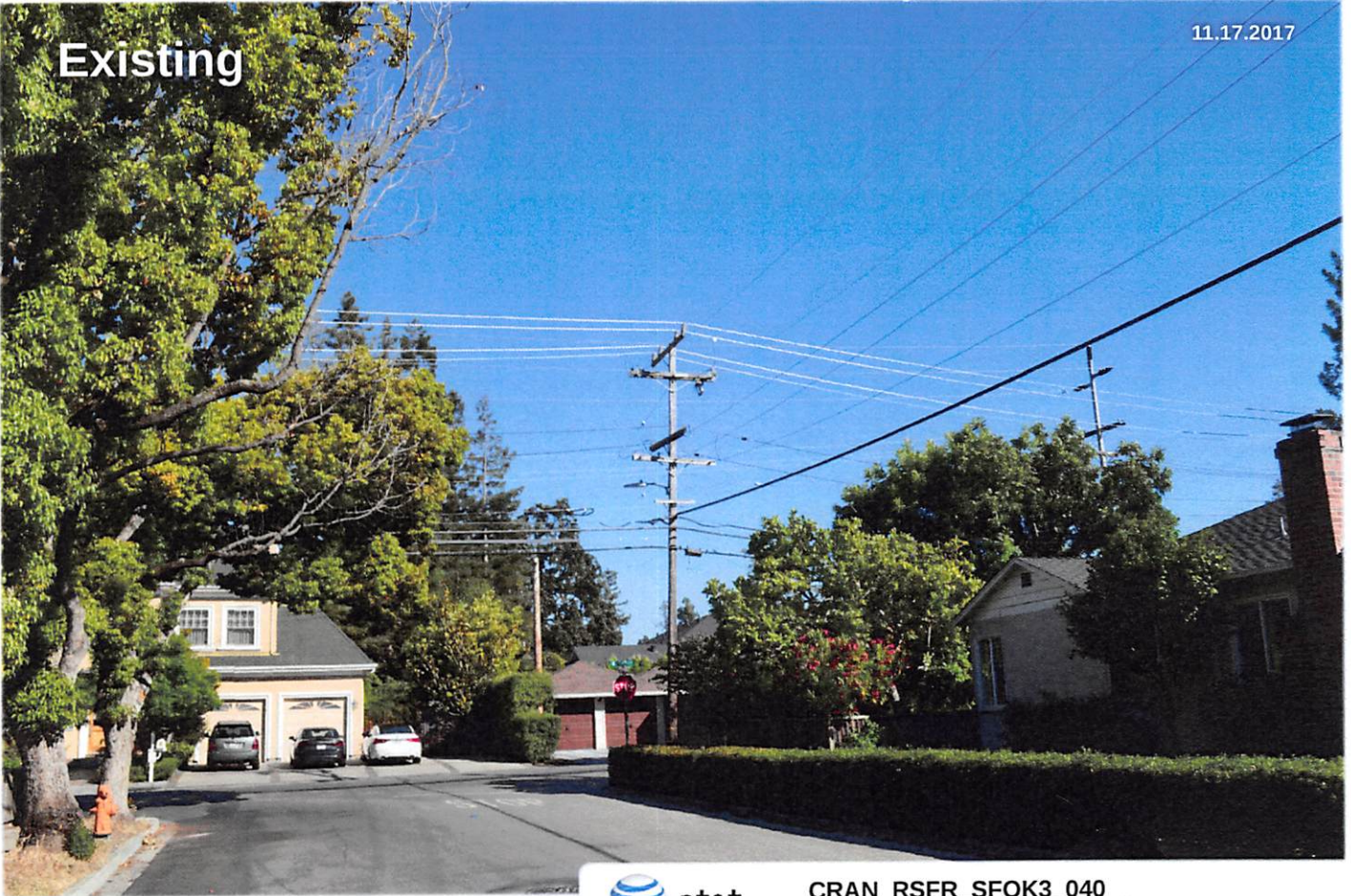
proposed AT&T pole mounted equipment



Photo simulation as seen looking southeast along Sequoia Avenue

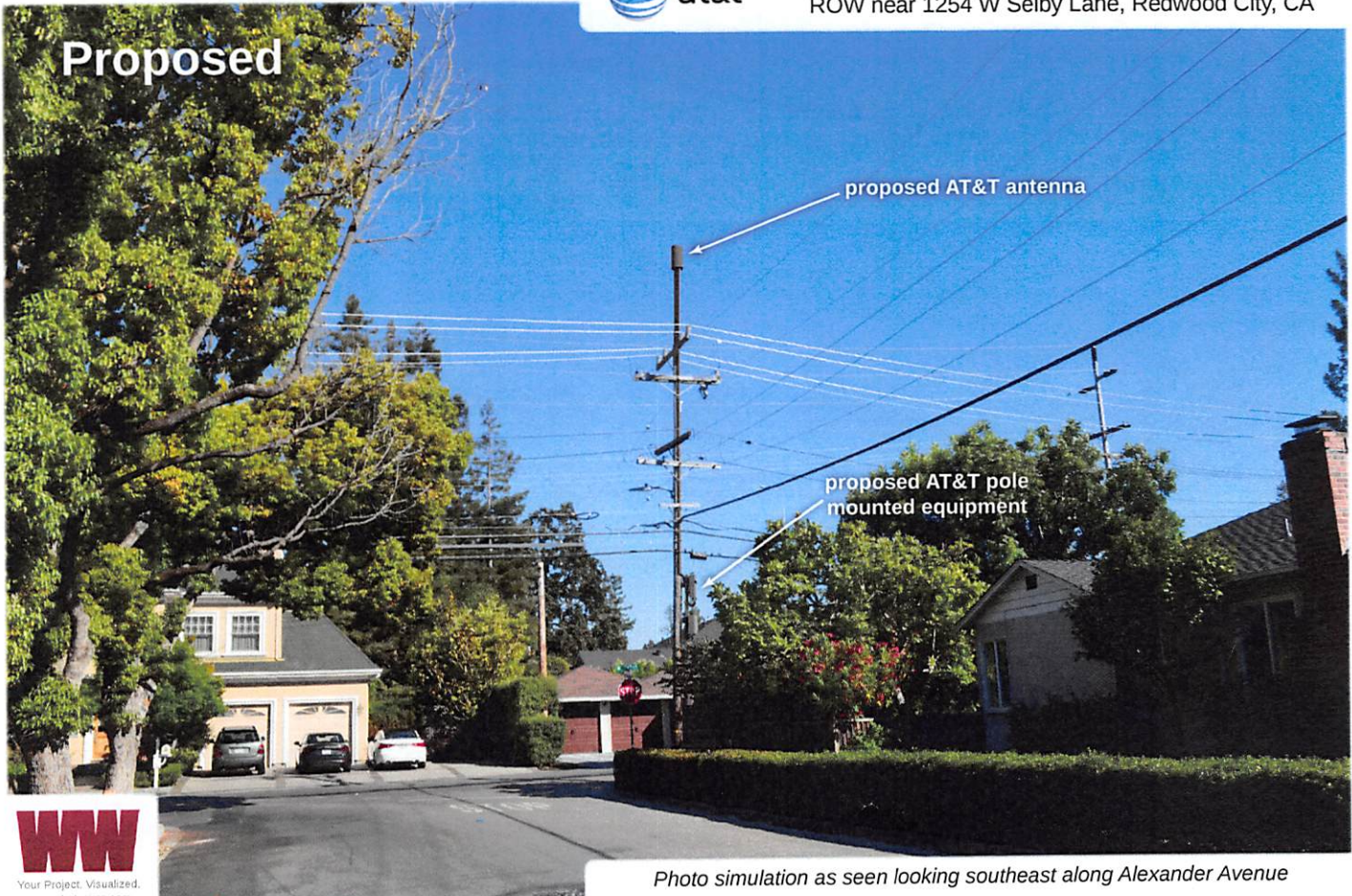
11.17.2017

# Existing



CRAN\_RSFR\_SF0K3\_040  
ROW near 1254 W Selby Lane, Redwood City, CA

# Proposed



proposed AT&T antenna

proposed AT&T pole mounted equipment



Photo simulation as seen looking southeast along Alexander Avenue



PG&E Wood Pole: Far from targeted area, more visible to residents, requires major tree trim, old pole adjacent that limits equipment space



**AT&T Mobility • Proposed DAS Node (Site No. SFOK3-041)  
431 Sequoia Avenue • Atherton, California**

**Statement of Hammett & Edison, Inc., Consulting Engineers**

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of AT&T Mobility, a personal wireless telecommunications carrier, to evaluate the addition of Node No. SFOK3-041 to be added to the AT&T distributed antenna system (“DAS”) in Atherton, California, for compliance with appropriate guidelines limiting human exposure to radio frequency (“RF”) electromagnetic fields.

**Executive Summary**

AT&T proposes to install an omnidirectional antenna on a utility pole sited in the public right-of-way at 431 Sequoia Avenue in Atherton. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

**Prevailing Exposure Standards**

The U.S. Congress requires that the Federal Communications Commission (“FCC”) evaluate its actions for possible significant impact on the environment. A summary of the FCC’s exposure limits is shown in Figure 1. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. The most restrictive FCC limit for exposures of unlimited duration to radio frequency energy for several personal wireless services are as follows:

Wireless Service	Frequency Band	Occupational Limit	Public Limit
Microwave (Point-to-Point)	5–80 GHz	5.00 mW/cm <sup>2</sup>	1.00 mW/cm <sup>2</sup>
WiFi (and unlicensed uses)	2–6	5.00	1.00
BRS (Broadband Radio)	2,600 MHz	5.00	1.00
WCS (Wireless Communication)	2,300	5.00	1.00
AWS (Advanced Wireless)	2,100	5.00	1.00
PCS (Personal Communication)	1,950	5.00	1.00
Cellular	870	2.90	0.58
SMR (Specialized Mobile Radio)	855	2.85	0.57
700 MHz	700	2.40	0.48
[most restrictive frequency range]	30–300	1.00	0.20

Power line frequencies (60 Hz) are well below the applicable range of these standards, and there is considered to be no compounding effect from simultaneous exposure to power line and radio frequency fields.

**General Facility Requirements**

Wireless nodes typically consist of two distinct parts: the electronic transceivers (also called “radios” or “channels”) that are connected to a central “hub” (which in turn are connected to the traditional





**AT&T Mobility • Proposed DAS Node (Site No. SFOK3-041)  
431 Sequoia Avenue • Atherton, California**

wired telephone lines), and the passive antenna(s) that send the wireless signals created by the radios out to be received by individual subscriber units. The radios are often located on the same pole as the antennas and are connected to the antennas by coaxial cables. Because of the short wavelength of the frequencies assigned by the FCC for wireless services, the antennas require line-of-sight paths for their signals to propagate well and so are installed at some height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. This means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

### **Computer Modeling Method**

The FCC provides direction for determining compliance in its Office of Engineering and Technology Bulletin No. 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation," dated August 1997. Figure 2 attached describes the calculation methodologies, reflecting the facts that a directional antenna's radiation pattern is not fully formed at locations very close by (the "near-field" effect) and that at greater distances the power level from an energy source decreases with the square of the distance from it (the "inverse square law"). The conservative nature of this method for evaluating exposure conditions has been verified by numerous field tests.

### **Site and Facility Description**

Based upon information provided by AT&T, including drawings by Precision Design and Drafting, Inc., dated October 27, 2017, it is proposed to install one KMW Model FX-OM2L10H2-06T, 2-foot tall, omnidirectional cylindrical antenna, on an extension to be added to the top of the utility pole sited in the public right-of-way in front of the two-story residence located at 431 Sequoia Avenue in Atherton. The antenna would employ 6° downtilt and would be mounted at an effective height of about 47½ feet above ground. The maximum effective radiated power in any direction would be 510 watts, representing simultaneous operation of 370 watts for PCS and 140 watts for 700 MHz service. There are reported no other wireless telecommunications base stations at this site or nearby.

### **Study Results**

For a person anywhere at ground, the maximum RF exposure level due to the proposed AT&T operation is calculated to be 0.0037 mW/cm<sup>2</sup>, which is 0.69% of the applicable public exposure limit. The maximum calculated level at the second-floor elevation of any nearby building is 1.2% of the public exposure limit. It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation.

**AT&T Mobility • Proposed DAS Node (Site No. SFOK3-041)  
431 Sequoia Avenue • Atherton, California**

**Recommended Mitigation Measures**

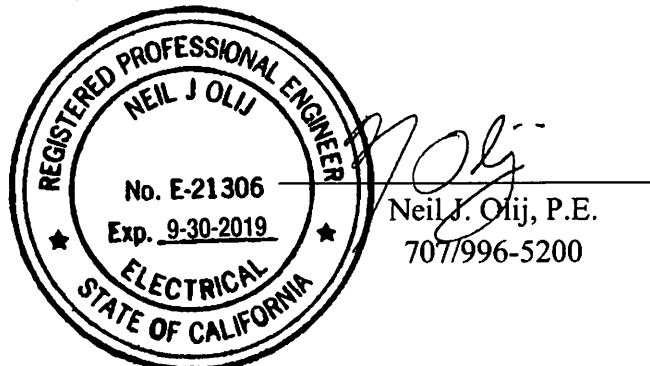
Due to its mounting location and height, the AT&T antenna would not be accessible to the general public; and so no mitigation measures are necessary to comply with the FCC public exposure guidelines. To prevent occupational exposures in excess of the FCC guidelines, it is recommended that appropriate RF safety training be provided to all authorized personnel who have access to the antenna. No access within 4 feet at the same height as the AT&T antenna, such as might occur during certain maintenance activities near the top of the pole, should be allowed while the node is in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. It is recommended that an explanatory sign\* be posted at the antenna and/or on the pole below the antenna, readily visible from any angle of approach to persons who might need to work within that distance.

**Conclusion**

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the node proposed by AT&T Mobility at 431 Sequoia Avenue in Atherton, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating nodes.

**Authorship**

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-21306, which expires on September 30, 2019. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.



November 29, 2017

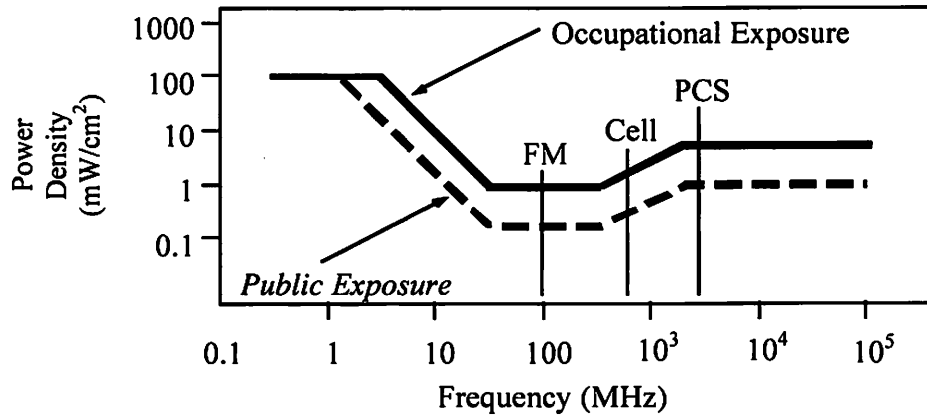
\* Signs should comply with OET-65 color, symbol, and content recommendations. Contact information should be provided (e.g., a telephone number) to arrange for access to restricted areas. The selection of language(s) is not an engineering matter, and guidance from the landlord, local zoning or health authority, or appropriate professionals may be required. Signage may also need to comply with the requirements of California Public Utilities Commission General Order No. 95.

## FCC Radio Frequency Protection Guide

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission (“FCC”) to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The FCC adopted the limits from Report No. 86, “Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements (“NCRP”). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent standard, developed by the Institute of Electrical and Electronics Engineers and approved as American National Standard ANSI/IEEE C95.1-2006, “Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” includes similar limits. These limits apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

As shown in the table and chart below, separate limits apply for occupational and public exposure conditions, with the latter limits (in *italics* and/or dashed) up to five times more restrictive:

Frequency Applicable Range (MHz)	Electromagnetic Fields (f is frequency of emission in MHz)					
	Electric Field Strength (V/m)		Magnetic Field Strength (A/m)		Equivalent Far-Field Power Density (mW/cm <sup>2</sup> )	
0.3 – 1.34	614	<i>614</i>	1.63	<i>1.63</i>	100	<i>100</i>
1.34 – 3.0	614	<i>823.8/f</i>	1.63	<i>2.19/f</i>	100	<i>180/f<sup>2</sup></i>
3.0 – 30	1842/f	<i>823.8/f</i>	4.89/f	<i>2.19/f</i>	900/f <sup>2</sup>	<i>180/f<sup>2</sup></i>
30 – 300	61.4	<i>27.5</i>	0.163	<i>0.0729</i>	1.0	<i>0.2</i>
300 – 1,500	3.54√f	<i>1.59√f</i>	√f/106	<i>√f/238</i>	f/300	<i>f/1500</i>
1,500 – 100,000	137	<i>61.4</i>	0.364	<i>0.163</i>	5.0	<i>1.0</i>



Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has built those formulas into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radio sources. The program allows for the description of buildings and uneven terrain, if required to obtain more accurate projections.

## RFR.CALC™ Calculation Methodology

### Assessment by Calculation of Compliance with FCC Exposure Guidelines

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission (“FCC”) to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The maximum permissible exposure limits adopted by the FCC (see Figure 1) apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits.

#### Near Field.

Prediction methods have been developed for the near field zone of panel (directional) and whip (omnidirectional) antennas, typical at wireless telecommunications base stations, as well as dish (aperture) antennas, typically used for microwave links. The antenna patterns are not fully formed in the near field at these antennas, and the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) gives suitable formulas for calculating power density within such zones.

For a panel or whip antenna, power density  $S = \frac{180}{\theta_{BW}} \times \frac{0.1 \times P_{net}}{\pi \times D \times h}$ , in mW/cm<sup>2</sup>,

and for an aperture antenna, maximum power density  $S_{max} = \frac{0.1 \times 16 \times \eta \times P_{net}}{\pi \times h^2}$ , in mW/cm<sup>2</sup>,

where  $\theta_{BW}$  = half-power beamwidth of the antenna, in degrees, and  
 $P_{net}$  = net power input to the antenna, in watts,  
 $D$  = distance from antenna, in meters,  
 $h$  = aperture height of the antenna, in meters, and  
 $\eta$  = aperture efficiency (unitless, typically 0.5-0.8).

The factor of 0.1 in the numerators converts to the desired units of power density.

#### Far Field.

OET-65 gives this formula for calculating power density in the far field of an individual RF source:

power density  $S = \frac{2.56 \times 1.64 \times 100 \times RFF^2 \times ERP}{4 \times \pi \times D^2}$ , in mW/cm<sup>2</sup>,

where ERP = total ERP (all polarizations), in kilowatts,  
RFF = relative field factor at the direction to the actual point of calculation, and  
D = distance from the center of radiation to the point of calculation, in meters.

The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 (1.6 x 1.6 = 2.56). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units of power density. This formula has been built into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radiation sources. The program also allows for the description of uneven terrain in the vicinity, to obtain more accurate projections.

**AT&T Mobility • Proposed DAS Node (Site No. SFOK3-040)  
1254 West Selby Lane • Redwood City, California**

**Statement of Hammett & Edison, Inc., Consulting Engineers**

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of AT&T Mobility, a personal wireless telecommunications carrier, to evaluate the addition of Node No. SFOK3-040 to be added to the AT&T distributed antenna system (“DAS”) in Redwood City, California, for compliance with appropriate guidelines limiting human exposure to radio frequency (“RF”) electromagnetic fields.

**Executive Summary**

AT&T proposes to install an omnidirectional antenna on a utility pole sited in the public right-of-way near 1254 West Selby Lane in Redwood City. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

**Prevailing Exposure Standards**

The U.S. Congress requires that the Federal Communications Commission (“FCC”) evaluate its actions for possible significant impact on the environment. A summary of the FCC’s exposure limits is shown in Figure 1. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. The most restrictive FCC limit for exposures of unlimited duration to radio frequency energy for several personal wireless services are as follows:

Wireless Service	Frequency Band	Occupational Limit	Public Limit
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Power line frequencies (60 Hz) are well below the applicable range of these standards, and there is considered to be no compounding effect from simultaneous exposure to power line and radio frequency fields.

**General Facility Requirements**

Wireless nodes typically consist of two distinct parts: the electronic transceivers (also called “radios” or “channels”) that are connected to a central “hub” (which in turn are connected to the traditional

**AT&T mobility • Proposed DAS Node (Site No. SFOK3-040)  
1254 West Selby Lane • Redwood City, California**

wired telephone lines), and the passive antenna(s) that send the wireless signals created by the radios out to be received by individual subscriber units. The radios are often located on the same pole as the antennas and are connected to the antennas by coaxial cables. Because of the short wavelength of the frequencies assigned by the FCC for wireless services, the antennas require line-of-sight paths for their signals to propagate well and so are installed at some height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. This means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

### **Computer Modeling Method**

The FCC provides direction for determining compliance in its Office of Engineering and Technology Bulletin No. 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation," dated August 1997. Figure 2 attached describes the calculation methodologies, reflecting the facts that a directional antenna's radiation pattern is not fully formed at locations very close by (the "near-field" effect) and that at greater distances the power level from an energy source decreases with the square of the distance from it (the "inverse square law"). The conservative nature of this method for evaluating exposure conditions has been verified by numerous field tests.

### **Site and Facility Description**

Based upon information provided by AT&T, including drawings by Precision Design and Drafting, Inc., dated November 3, 2017, it is proposed to install one KMW Model FX-OM2L10H2-06T, 2-foot tall, omnidirectional cylindrical antenna, on an extension to be added to the top of the utility pole sited in the public right-of-way at the southwest corner of West Selby Avenue and Alexander Avenue in Redwood City. The antenna would employ 6° downtilt and would be mounted at an effective height of about 47 feet above ground. The maximum effective radiated power in any direction would be 510 watts, representing simultaneous operation of 370 watts for PCS and 140 watts for 700 MHz service. There are reported no other wireless telecommunications base stations at this site or nearby.

### **Study Results**

For a person anywhere at ground, the maximum RF exposure level due to the proposed AT&T operation is calculated to be 0.0038 mW/cm<sup>2</sup>, which is 0.71% of the applicable public exposure limit. The maximum calculated level at the second-floor elevation of any nearby building is 1.2% of the public exposure limit. It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation.



**AT&T mobility • Proposed DAS Node (Site No. SFOK3-040)  
1254 West Selby Lane • Redwood City, California**

**Recommended Mitigation Measures**

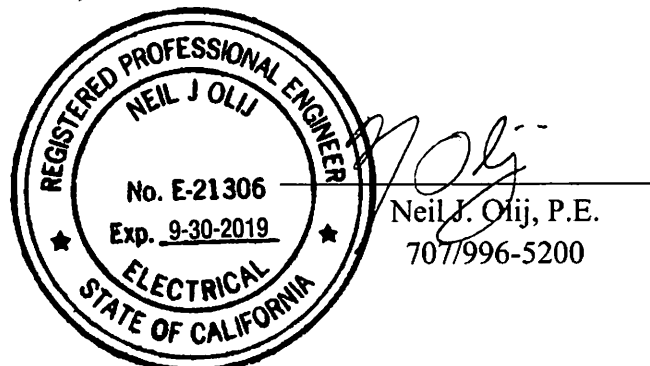
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**Conclusion**

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the node proposed by AT&T Mobility near 1254 West Selby Lane in Redwood City, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating nodes.

**Authorship**

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-21306, which expires on September 30, 2019. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.



November 29, 2017

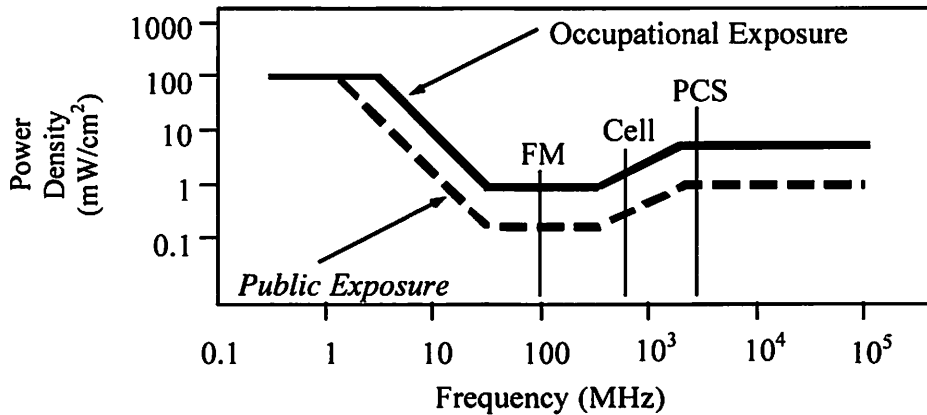
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# RFR.CALC™ Calculation Methodology

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and for an aperture antenna, maximum power density  $S_{max} = \frac{0.1 \times 16 \times \eta \times P_{net}}{\pi \times h^2}$ , in mW/cm<sup>2</sup>,

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 $D$  = distance from antenna, in meters,  
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The factor of 0.1 in the numerators converts to the desired units of power density.

### Far Field.

OET-65 gives this formula for calculating power density in the far field of an individual RF source:

$$\text{power density } S = \frac{2.56 \times 1.64 \times 100 \times RFF^2 \times ERP}{4 \times \pi \times D^2}, \text{ in mW/cm}^2,$$

- where ERP = total ERP (all polarizations), in kilowatts,  
RFF = relative field factor at the direction to the actual point of calculation, and  
D = distance from the center of radiation to the point of calculation, in meters.

The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 (1.6 x 1.6 = 2.56). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units of power density. This formula has been built into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radiation sources. The program also allows for the description of uneven terrain in the vicinity, to obtain more accurate projections.